

**FACT SHEET FOR NPDES PERMIT WA0040215**  
**TRANSALTA CENTRALIA MINING LLC, LIMITED PURPOSE LANDFILL**

**(Insert date of this fact sheet)**

**PURPOSE of this Fact Sheet**

This fact sheet explains and documents the decisions Ecology made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for TransAlta Centralia Mining LLC (TCM), Limited Purpose Landfill (LPLF).

The Environmental Protection Agency (EPA) developed the NPDES permitting program as a tool to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” EPA delegated to the Department of Ecology (Ecology) the power and duty to write, issue, and enforce NPDES permits within Washington State. Both state and federal laws require any industrial facility to obtain a permit before discharging waste or chemicals to a water body.

An NPDES permit limits the types and amounts of pollutants the facility may discharge. Those limits are based either on (1) the pollution control or wastewater treatment technology available to the industry, or on (2) the receiving water’s customary beneficial uses. This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit *and accompanying fact sheet* for public evaluation before issuing an NPDES permit.

**PUBLIC ROLE in the Permit**

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before issuing the final permit to the facility operator (WAC 173-220-050). Copies of the fact sheet and draft permit for TCM’s, LPLF, NPDES permit WA0040215 is available for public review and comment from insert month day, year until the close of business month day, year. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement**.

Before publishing the draft NPDES permit, TransAlta Centralia Mining LLC, Limited Purpose Landfill, reviewed it for factual accuracy. Ecology corrected any errors or omissions about the facility’s location, product type or production rate, discharges or receiving water, or its history.

After the public comment period closes, Ecology will summarize substantive comments and our responses to them. Ecology will include our summary and responses to comments to this Fact Sheet as **Appendix D - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology will not revise the rest of the fact sheet, but the full document will become part of the legal history contained in the facility’s permit file.

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## I. INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

Ecology adopted rules describing how it exercises its authority:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC) and for ground waters (chapter 173-200 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of Plans and Reports for Construction of Wastewater Facilities (chapter 173-240 WAC)

These rules require any industrial facility operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

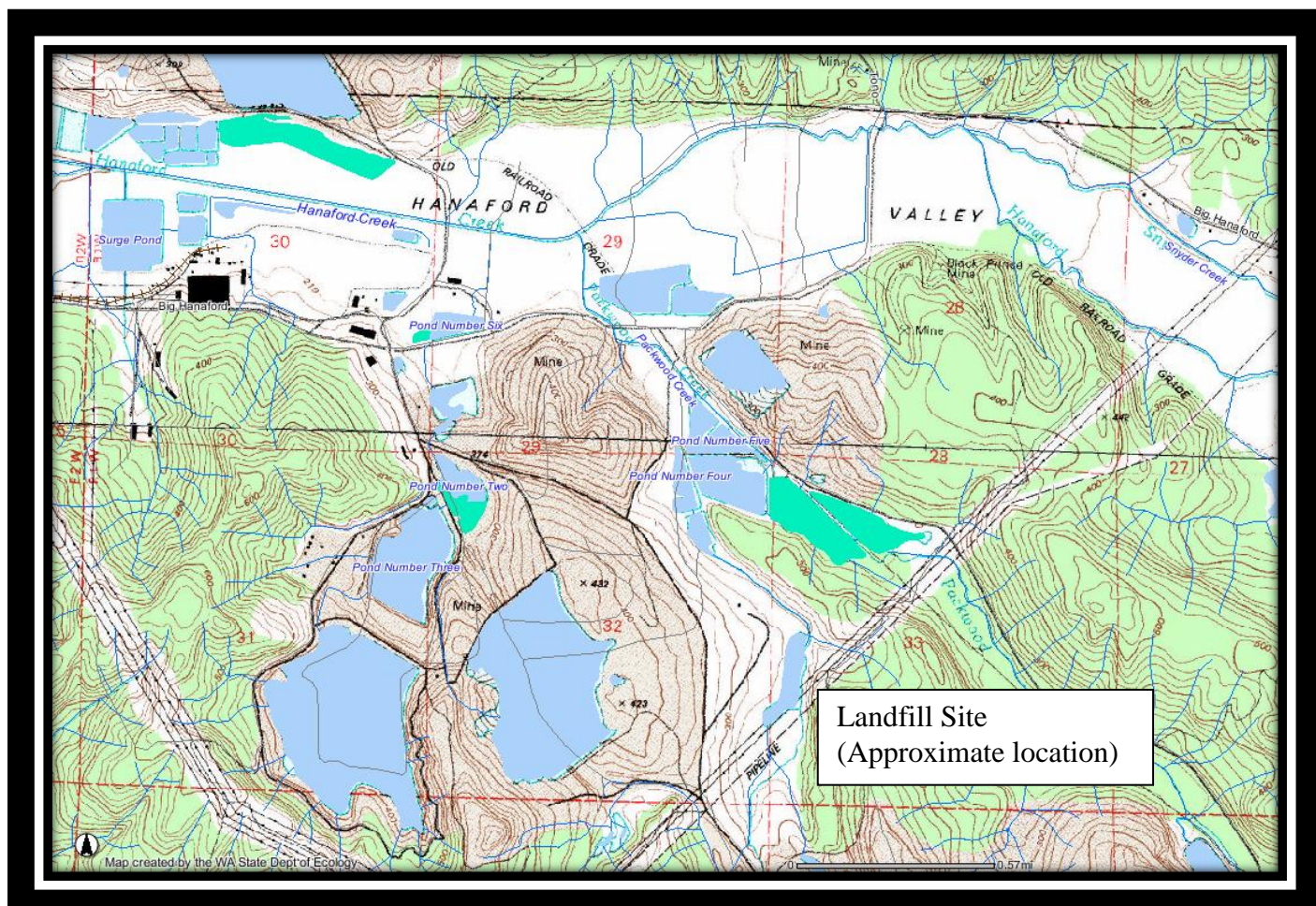
Under the NPDES permit program and in response to a complete and accepted permit application Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of 30 days (WAC 173-220-050). (See **Appendix A--Public Involvement** for more detail about the Public Notice and Comment procedures). After the Public Comment Period ends, Ecology may make changes to the draft NPDES permit in response to comments. Ecology will summarize the responses to comments and any changes to the permit in **Appendix D**.

## II. BACKGROUND INFORMATION

**Table 1: General Facility Information**

Applicant:	TransAlta Centralia Mining LLC
Facility Name and Address:	TransAlta Centralia Mining, LLC 1015 Big Hanaford Road Centralia, WA 98531
Type of Treatment:	Sedimentation ponds to treat leachate to reduce turbidity, combined with an inflow channel to reduce pH and treat for Cr (VI)
SIC Code	1221
Discharge Location:	Packwood Creek Latitude: 46° 44' 14" N, Longitude: 122° 49' 00" W

**Figure 1. Facility Location Map**



## **A. Facility Description**

### **History**

TransAlta Centralia Mining LLC, (TCM) has proposed to develop a limited purpose landfill (LPLF) within a selected area of the Centralia Mine, shown in Figure 1. TCM plans to use the LPLF to dispose of waste materials generated by TransAlta Centralia Generation LLC, (TCG) coal-fired power plant. TCM has applied for a LPLF permit to Lewis County and Ecology under the solid waste handling standards of WAC 173-350.

The LPLF constitutes a new industrial point source which requires an NPDES permit for discharge of treated wastewater (leachate). Leachate is defined as precipitation that has passed through the waste body. Incidental stormwater that comes into contact with the waste (contact water) also has the potential to pick up constituents that may impact water quality. For the purposes of this fact sheet, contact water and leachate are referred to as “leachate.”

TCM plans to route the leachate to the leachate pond/channel system and the pond 44 and pond 5 system ultimate discharge into Packwood Creek. It will divert most stormwater around the landfill and manage it in its existing stormwater collection system monitored under TCM’s existing NPDES permit (WA0037338).

## Industrial Process

The TCG coal-fired power plant produces electrical energy. Coal, the electrostatic precipitator (ESP) emission control devices, and the flue gas desulfurization (FGD) scrubber system generate byproducts of bottom ash, fly ash, and filter cake. TCM proposes to dispose of these byproducts in the LPLF. Bottom ash is produced from the coal combustion process. Fly ash is collected in the ESPs and typically resold for beneficial use. The FGD system recirculates lime slurry to remove sulfur oxides from the stacks and produces waste streams associated with gypsum solid recovery and blowdown streams. Table 2 provides a summary of the system components and waste/product streams.

**Table 2: System Components and Waste/Product Streams**

System Components	Waste Product/streams
Hydroclone clusters	Gypsum solids → vacuum belt press → sale Scrubber bleed (blowdown) → lime treatment system
Lime treatment system High Density Sludge (HDS)	Filter cake → placed on gypsum pile and sold as gypsum-potential- minor amounts disposed in limited purpose landfill
Treated liquor (overflow)	Discharge to water system

Table 3 summarizes the by-products currently generated at the TCG and their estimated waste production per year for potential disposal to the LPLF. Bottom ash will be the primary waste stream that TCM disposes of in the LPLF.

**Table 3: By-Products Summary**

By-Products	Estimated Waste Production (tons per year)	Disposal
Surplus gypsum	0	LPLF
Dewatered lime sludge (filter cake)	0 to 4,500	LPLF
Fly Ash	0 to 15,000	LPLF
Bottom Ash	25,000 to 78,000	LPLF
<b>TOTAL DISPOSAL ESTIMATE 25,000 (lowest volume case) to 97,500 (highest volume case)</b>		

## Gypsum

Gypsum is produced by reacting lime with the sulfur oxides in the TCG flue gases and with atmospheric oxygen to produce calcium sulfate (gypsum) solid. The gypsum slurry is dewatered on multiple belt filter presses and is sold as a raw material for manufacturing wallboard. Table 3 shows that TCM will not dispose this material to the LPLF.

## Lime Treatment Process and Filter Cake

TCM installed the high density sludge (HDS) lime treatment system in 2005 to replace the existing clarifier and brine concentrator unit. This process has the advantage of generating a smaller volume of waste material (dewatered lime sludge or “filter cake”) compared to prior operations. To date, TCM is in

start-up mode with this system, and is currently directing the filter cake waste stream to the gypsum pile to blend with the main gypsum process, aiming to create a salable product for use in manufacturing wallboard. The blend of gypsum and relatively minor amounts of filter cake from the HDS process has met the 95 percent purity requirements for gypsum sale. If the purity levels of the HDS filter cake are less than allowable to blend with the main gypsum, TCM plans to haul the filter cake to the LPLF for disposal. If this occurs, TCM estimates it will dispose of approximately 4,500 tons per year to the LPLF.

### **Bottom Ash and Fly Ash**

The coal combustion process and electrostatic precipitator system in the TCG operation generate bottom ash and fly ash. TCM estimates it will dispose of approximately 93,000 tons per year of this waste material to the LPLF.

### **Wastewater Treatment**

Stormwater that infiltrates through the landfill waste body is considered leachate and is routed to the leachate pond (Figure 2). The leachate collection system for the LPLF will consist of a 24-inch thick layer of bottom ash supplemented with buried strip drains lying on top of the barrier soil layer. The overall LPLF bottom area floor has a ridge at the center and generally slopes to the northwest and the southwest from that high point. The leachate collection trenches will run along the toe of slope along the downstream perimeter of the landfill. These trenches will collect and transmit leachate from the north and south portions of the ridgeline. The leachate collection toe drains will be comprised of perforated collection pipe that is encased in a gravel envelope and a geotextile wrap. TCM plans to construct two toe drains to drain both the north and south halves of the landfill. At regular intervals, the leachate collection pipes will tee off and discharge to a main exterior leachate collection ditch that drains to the leachate pond system. TCM plans to line the leachate collection ditch with the same low-permeability native soil layer barrier that is used for the landfill waste areas. The facility will direct stormwater that comes into contact with waste from waste slope runoff areas to this leachate pond system. Figure 3 shows the water flow schematic.

The proposed treatment consists of: (1) flocculation and sedimentation to remove suspended sediment and colloidal material, (2) pH adjustment through the addition of an acid, and (3) hexavalent chromium, Cr (VI) removal. TCM proposed to add a ferrous reducing compound (ferrous sulfate or ferrous chloride) to the wastewater stream to treat Cr (VI).

TCM plans to route leachate collected from the LPLF to the treatment channel system via the main exterior leachate ditches. After the confluence of the two main ditches, a flume device will measure the flow followed by an influent pH measurement. The flow will then be collected in a basin where the facility will adjust the pH using an acid solution based on the incoming pH and the flow rate measured by the flume. Following pH adjustment, the leachate will collect in a second basin where TCM will measure the final pH and add the reducing agent to remove hexavalent chromium (Cr VI), Figure 4.

### **Treatment Procedure Adjustment**

TCM will refine these procedures in the field based on actual water quality and adjustment requirements. The leachate collected and treated in the leachate ponds will then discharge at Outfall LPLF-01 prior to the pond 44 system. The facility will collect grab samples at the outfall of the second settling pond to determine treatment effectiveness on a prescribed basis. The approved treatment system includes automated controls located within the treatment building. The automated controls system will have trend capability to record pH and flow at an adjustable frequency and for an adjustable duration. TCM will be able to download this data into a laptop for trending and analysis.



The engineering report for above treatment procedure was submitted to Ecology in January 2009. Ecology approved this engineering report on February 25, 2009. On March 19, 2009, TCM submitted construction plans for the proposed treatment procedure. On April 3, 2009, Ecology approved these construction plans.

### **Discharge Outfall**

TCM plans to locate the treatment system south of the proposed landfill area. The proposed outfall sample point for the discharge of the pond, Outfall LPLF-01, is the downstream discharge culvert shown in Figure 2. The approximate location of Outfall LPLF-01 is Lat 46° 44' 14" N, Longitude 122° 49' 00" W. The treatment ponds will discharge the treated contact water and leachate to the Pond 44 system. Pond 44 system flows into the Pond 5 system, which eventually discharges at Outfall 001 of TCM's existing NPDES permit, into Packwood Creek. This Outfall is located at Latitude 46° 45' 08"N, Longitude 122° 49' 47" W.



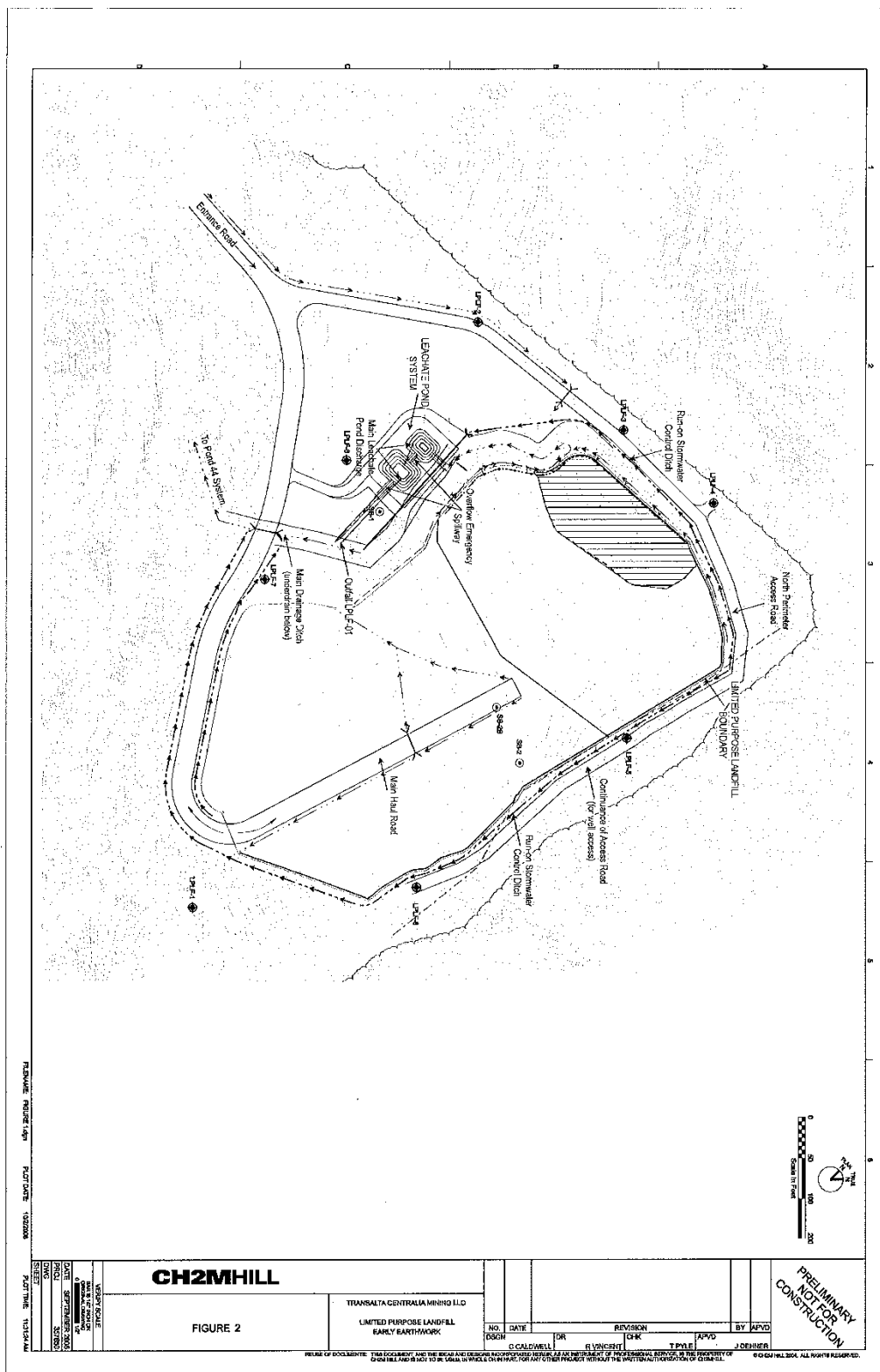
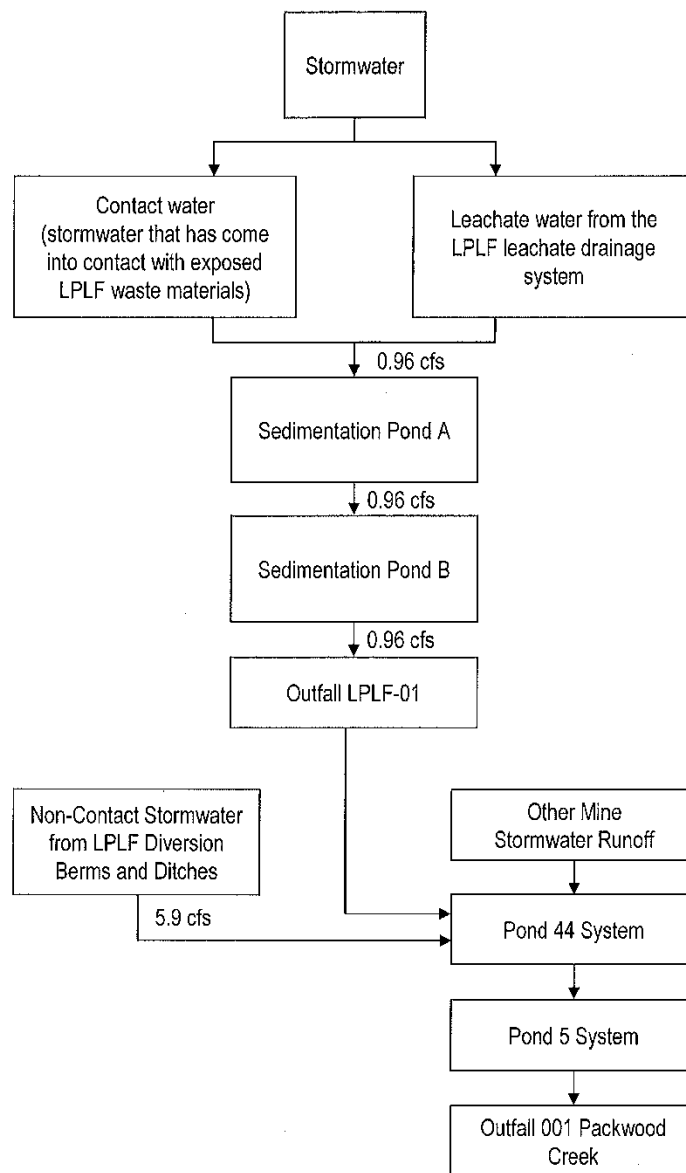
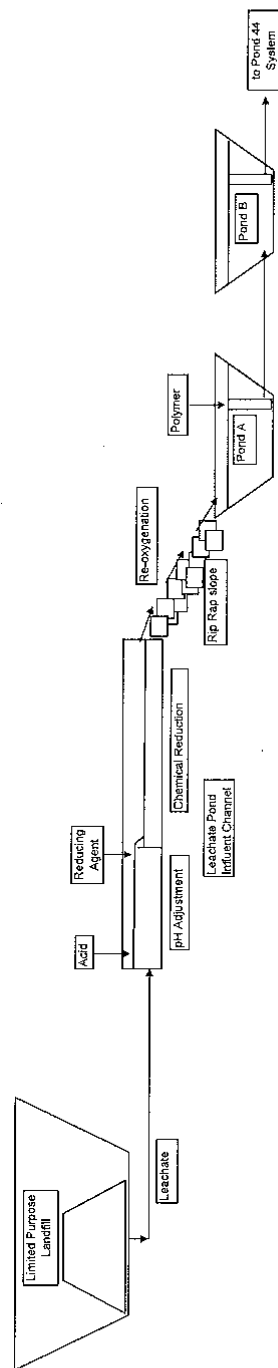


Figure 2



**FIGURE 3**  
Schematic of Water Flow  
*TransAlta Centralia Mining, LLC*

Figure 3



**FIGURE 4**  
Leachate Pond Treatment System Process Flow Diagram  
TransAlta Centralia Mining, LLC

Figure 4 Leachate Treatment PFD.xls

## B. Permit Status

This is a new facility. TCM submitted an application for a permit on November 19, 2008. Ecology accepted it as complete on February 19, 2009.

## C. Summary of Compliance with Previous Permit Issued

This is a new facility with no prior permit.

## D. Wastewater Characterization

TCM has predicted the leachate chemistry from recent characterization testing of the waste materials. It ran a synthetic precipitation leachate procedure (SPLP) for two composite samples of waste materials. Ecology compared these test results to surface water quality standards, human health criteria and the national effluent limits for landfills as shown in Table 4. TCM conducted a priority pollutant scan only on the highest loading case. Further testing of the leachate, or Whole Effluent Toxicity (WET) testing, will occur after the LPLF is in operation in order to verify the SPLP results and refine the treatment operations. Ecology received these test results with the engineering report and NPDES permit application of January 2009. The wastewater characterization in Table 4 shows that leachate will exceed the surface water quality standards (WAC 173-201A) for chromium (VI) and pH. To meet the surface water quality standards, TCM proposed the treatment procedure, discussed under the wastewater treatment.

Table 4: Wastewater Characterization (Leachate Chemistry Comparison to Surface Water Quality, and Human Health Criteria NPDES Engineering Report, TransAlta Centralia Mining LLC)

Parameter	Washington State Surface Water Quality Criteria – Fresh water  (µg/L except where noted)		National Effluent Limits for Landfills		Human Health Water Quality Criteria	SPLP Leachate Results (µg/L)
	Acute	Chronic	Maximum Daily (mg/L)	Maximum Monthly (mg/L)	Water + Organism Criteria (µg/L)	
Aldrin/Dieldrin	2.5	0.0019			0.00005	<0.0097
Ammonia: un- ionized, NH <sub>3</sub> (mg/L)	37	8	10	4.9		<0.10
Arsenic	360	190			0.018	2.7 -4.3
BOD (mg/L)			140	37		<2
Cadmium	0.9	0.4			5	<5
Chromium (Hex)	15	10			100, Cr. Total	50
Chromium (Tri)	194	62.9			100, Cr. Total	
Cyanide	22	5.2			140	<0.1

Parameter	Washington State Surface Water Quality Criteria – Fresh water (µg/L except where noted)		National Effluent Limits for Landfills		Human Health Water Quality Criteria	SPLP Leachate Results (µg/L)
	Acute	Chronic	Maximum Daily (mg/L)	Maximum Monthly (mg/L)	Water + Organism Criteria (µg/L)	
Copper	5.1	3.8				
Dieldrin/Aldrin	2.5	0.0019			0.00005	<0.0099
Endosulfan	0.22	0.056			62	<0.0099
Endrin	0.18	0.0023			0.059	<0.0099
Heptachlor	0.52	0.0038			9	<0.0097
Lead	15.8	0.62				<10
Mercury	2.1	0.012				<0.20
Nickel	483.5	53.7			610	<20
Pentachlorophenol (PCP)	9.1	5.6				<25
pH (S.U)						10.3 - 11.3
Selenium	20	5			170	4.4
Silver	0.39					<10
Temperature (°C)						7.2 -15.5
Toxaphene	0.73	0.0002				
TSS (mg/L)						40
Zinc	39	35.6	0.22	0.11	0.00028	<10

Based on the wastewater characterization shown in Table 4, Ecology proposes to apply the surface water quality and human health criteria for chromium hexavalent and arsenic respectively.

#### E. Description of the Receiving Water

The treated contact water and leachate will discharge to the Pond 44 system. The Pond 44 system flows into the Pond 5 system which eventually discharges at Outfall 001 of TCM's existing NPDES permit, into Packwood Creek. Packwood Creek discharges into the Big Hanaford Creek, which is a tributary of the Skookumchuck River, all of which are surface waters that have a "Class A" designation. Other nearby point sources outfalls include: TransAlta Mining (WA 0037338) and TransAlta Power Generation Plant (WA 0001546). Significant nearby non-point sources of pollutants are unknown. In 1994 (Upper Chehalis River Dry Season Total Maximum Daily Load Study) and 1999 (Upper Chehalis River Basin Temperature Total Maximum Daily Load) Total Maximum Daily Load (TMDL) were published. This

water body is categorized as Category 4A. This means water bodies have an approved TMDL and are actively being implemented. The Skookumchuck River is in Category 4A for temperature.

#### **F. SEPA State Environmental Policy Act (SEPA) Compliance**

To meet the intent of State Environmental Policy Act (SEPA), an existing, unpermitted discharge must undergo SEPA review during the permitting process. The facility filed a SEPA checklist with Lewis County on January 21, 2008, and Lewis County issued a mitigated determination of non-significance for the project on October 24, 2008.

### **III. PROPOSED PERMIT CONDITIONS**

Federal and state regulations require that effluent limits in an NPDES permit must be either technology or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the receiving water will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from the supporting engineering report. Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Nor does Ecology usually develop permit limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology, as described in 40 CFR 122.42(a), if significant changes occur in any constituent. Industries may be in violation of their permit until Ecology modifies the permit to reflect additional discharge of pollutants.

#### **A. Design Criteria**

Under WAC 173-220-150 (1) (g), neither flows nor waste loadings may exceed approved design criteria. Ecology approved design criteria for this facility's treatment system. These criteria were obtained from the engineering report, *"TransAlta Centralia Mining LLC Limited Purpose Landfill NPDES Engineering Report"*, of January 2009. TCM's consultant CH2MHILL prepared this report. The treatment units consist of sedimentation ponds for treating leachate from the LPLF for turbidity, combined with an inflow channel to reduce pH and treat for Cr (VI). The treatment system is designed to treat the flow of 219 gallons per minute (gpm).

## B. Technology-Based Effluent Limits

U.S. EPA promulgated technology-based effluent limitations for the coal mining point source category 40 CFR Part 434 - Subpart B (Coal preparation plants and coal preparation plant associated areas), and it states the following:

*The provision of this part subpart are applicable to discharges from coal preparation plants and coal preparation plant association areas, as indicated, including discharges which are pumped, siphoned, or drained from the coal preparation plant water circuit and coal storage, refuse storage and ancillary areas related to the cleaning or beneficiation of coal of any rank including, but not limited to, bituminous, lignite, and anthracite.*

Because this is a new project New Source Performance Standards (NSPS) apply. This category includes different limits based on the pH of the discharge prior to treatment. The following NSPS apply to those discharges that exhibit a pH of greater than 6.0 before treatment.

**Table 5: Technology based effluent limits for this discharge follows:**

Pollutant or Pollutant Property	Maximum for any 1 day	Average of daily values for 30 consecutive days
Iron, Total, (mg/L)	6.0	3.0
TSS	70	35
pH (Standard Units)	6.0 (minimum) – 9.0 (Maximum)	

TCM evaluated several treatment alternatives for the leachate to determine “all known, available, and reasonable methods of treatment” (AKART). The technical memorandum from CH2MHILL of November 11, 2008, evaluated whether the AKART for the wastewater discharge from the TCM’s LPLF would meet the surface water quality standard (WAC 173-201A). In 2009, the TCM submitted this technical memorandum to Ecology with its engineering report and NPDES permit application. CH2MHILL estimated the chemistry of the leachate by the SPLP procedure conducted using the TCG waste materials.

Based on the information provided in the engineering report and NPDES permit application, Ecology determined that the proposed treatment constitutes the AKART for the wastewater that TCM will generate.

## C. Surface Water Quality-Based Effluent Limits

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) were designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet established surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily loading study (TMDL). In 1994, Ecology completed a TMDL study for Chehalis River and its tributaries. The Skookumchuck River is part of the temperature TMDL. The treated effluent from the TCM’s LPLF will discharge to Packwood Creek, which is a tributary of Hanaford Creek, and Hanaford Creek is a tributary of Skookumchuck River. TCM’s LPLF must meet the temperature limit of 13 °C from October 1<sup>st</sup> through May 15 and 16 °C from May 16 through September 30<sup>th</sup> before it discharges its treated wastewater to Packwood Creek.



## **Numerical Criteria for the Protection of Aquatic Life and Recreation**

Numerical water quality criteria are published in the Water Quality Standards for Surface Waters (chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits. Ecology applies the surface water quality standards to the discharge of this permit.

## **Numerical Criteria for the Protection of Human Health**

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (40 CFR 131.36). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The Water Quality Standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

## **Narrative Criteria**

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the State of Washington.

## **Antidegradation**

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three Tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II

applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

Because this is a new discharge, Ecology must determine whether or not it must meet Tier II requirements. Because the proposed permit requires the discharge to meet water quality and human health criteria prior to discharge it should not cause a measurable change in Packwood Creek.

### Mixing Zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric criteria, so long as the diluting wastewater doesn't interfere with designated uses of the receiving water body (e.g., recreation, water supply, and aquatic life and wildlife habitat, etc.). The pollutant concentrations outside of the mixing zones must meet water quality numeric criteria. This permit does not authorize the mixing zone.

### D. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (40 CFR 131.36). Criteria applicable to this facility's discharge are summarized below in **Table 6**.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for, the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

**Table 6: Aquatic Life Uses & Associated Criteria**

<b>Core Summer Salmonid Habitat</b>	
Temperature Criteria – Highest 7DAD MAX	16°C (60.8°F)
Dissolved Oxygen Criteria	9.5 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> <li>• 5 NTU over background when the background is 50 NTU or less; or</li> <li>• A 10 percent increase in turbidity when the background turbidity is more than 50 NTU</li> </ul>
Total Dissolved Gas Criteria	Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection
pH Criteria	pH shall be within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units

- The recreational uses are extraordinary primary contact recreation, primary contact recreation, and secondary contact recreation. The recreational uses for this receiving water are identified below.

**Table 6: Recreational Uses & Associated Criteria**

<b>Recreational use</b>	<b>Criteria</b>
Extraordinary Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 50 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 100 colonies/100 mL
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL
Secondary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 200 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 400 colonies /100 mL

- The water supply uses are domestic, agricultural, industrial, and stock watering.
- The miscellaneous fresh water uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

#### **E. Evaluation of Surface Water Quality -Based Effluent Limits for Numeric Criteria**

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

**BOD<sub>5</sub>**--Ecology predicted no violation of the surface water quality standards for biochemical oxygen demand (BOD) under critical conditions.

**Temperature**--The state temperature standards (WAC 173-201A-200-210 and 600-612) include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits. Based on the limited information on the temperature, which Ecology received in the NPDES permit application of January 2009, the proposed permit requires TCM to report and meet the temperature

limit of 13 °C and 16 °C during the periods of October 1<sup>st</sup> through May 15<sup>th</sup> and May 16<sup>th</sup> through September 30<sup>th</sup> respectively.

**pH**--Ecology has determined that the treated effluent generated at the facility will meet the water quality standards of 6.5 and 8.5 standard units as it is discussed in the fact sheet and the AKART evaluation memo of November 2008.

**Turbidity**--The permit requires turbidity monitoring to assess compliance with the water quality criteria for turbidity because of potential fluctuations in turbidity of both the receiving water and the effluent.

**Toxic Pollutants**--Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

Due to limited effluent metals data from the SPLP, Ecology did not conduct the reasonable potential calculations for all pollutants (except Chromium (VI)). The proposed permit requires the TCM to conduct and report the sampling analysis results for the priority pollutants parameters annually. Ecology will conduct a reasonable potential evaluation when it renews the permit.

#### **F. Whole Effluent Toxicity**

The water quality standards for surface waters forbid discharge of effluent that causes toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

- *Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent.* Dischargers who monitor their wastewater using acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.
- *Chronic toxicity tests measure various sublethal toxic responses* such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Using the screening criteria in WAC 173-205-040, Ecology determined that the TCM's proposed LPLF effluent has the potential to cause aquatic toxicity. The proposed permit contains WET testing requirements as authorized by RCW 90.48.520 and 40 CFR 122.44, using procedures from WAC 173-205. The proposed permit requires the facility to conduct WET testing at prescribed intervals for twice a year, to characterize both the acute and chronic toxicity of the effluent.

If the WET testing shows acute or chronic toxicity levels that have a reasonable potential to cause receiving water toxicity, then the proposed permit will:

- Set a limit on acute or chronic toxicity.
- Require this facility operator to conduct WET testing to monitor compliance with an acute toxicity limit, a chronic toxicity limit, or both.

- Specify the procedures the facility operator must use to come back into compliance if toxicity exceeds the limits.

Ecology-accredited WET testing laboratories use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff knows how to calculate an NOEC, LC<sub>50</sub>, EC<sub>50</sub>, IC<sub>25</sub>, etc. Ecology gives all accredited labs the most recent version of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (<http://www.ecy.wa.gov/biblio/9580.html>), which is referenced in the permit. Ecology recommends that each regulated facility send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

## **G. Human Health**

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined the effluent may contain chemicals of concern posing a risk to human health. Ecology determined this because data information indicates regulated chemicals occur in the discharge. Ecology will evaluate the data TCM collects during this permit cycle when it renews the permit. Table 4 of the wastewater characterization shows that the LPLF exceeds the Human Health Criteria for arsenic of 0.018 µg/L. Therefore Ecology proposes the limit of 0.018 µg/L, before this wastewater is discharged to Packwood Creek.

## **H. Sediment Quality**

The aquatic sediment standards (WAC 173-204) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400).

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the Sediment Management Standards.

## **I. Ground Water Quality Limits**

The Ground Water Quality Standards, (chapter 173-200 WAC), protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

TCM's Limited Purpose Landfill does not discharge wastewater to ground and therefore Ecology imposed no permit limits to protect ground water.

# **IV. PROPOSED PERMIT LIMITS**

## **Permit Limits**

Based on the technology, surface water quality and human health criteria, Ecology proposes the following limits for TCM's LPLF operation in Centralia.

**Table 7: Proposed final effluent limits for the facility are the following:**

Parameters	Average Monthly	Maximum Daily
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Parameters	Average Monthly	Maximum Daily
Flow (GPD)	Report	Report
Total Suspended Solids (mg/L)	35	70
Iron (mg/L)	3.0	6.0
Chromium (Hex), (ug/L)	10.3	15.0
Arsenic (ug/L)	0.018	0.0263
Parameters		
Turbidity (NTU)	5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU	
Temperature (°C)	<b>7-DADMax ( 7-day average of the daily maximum temperatures)</b> October 1 <sup>st</sup> through May 15 <sup>th</sup> = 13 °C May 16 <sup>th</sup> through September 30 <sup>th</sup> = 16°C	
Priority Pollutants (ug/L)	Report	
pH (Standard Units)	6.5 (minimum) – 8.5 (Maximum)	

## V. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

### A. Lab Accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories* to prepare all monitoring data (with the exception of certain parameters).

### B. Effluent Limits which are Near Detection or Quantitation levels

The water quality-based effluent concentration limits for the parameters shown in table 6 of this fact sheet, are near the limits of current analytical methods to detect or accurately quantify. The method detection level (MDL) is the minimum concentration of a pollutant that can be measured and reported with a 99 percent confidence that its concentration is greater than zero (as determined by a specific laboratory method). The quantitation level is the level at which concentrations can be reliably reported with a specified level of error. Estimated concentrations are the values between the MDL and the QL. Ecology requires estimated concentrations to be reported. When reporting maximum daily effluent concentrations, Ecology requires the facility to report “less than X” where X is the required detection level if the measured effluent concentration falls below the detection level. When calculating average monthly concentrations, the facility must use all the effluent concentrations measured below the quantitation level but above the method detection level.

## **VI. OTHER PERMIT CONDITIONS**

### **A. Reporting and Recordkeeping**

Ecology based permit condition S3, on our authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

### **B. Non Routine and Unanticipated Discharges**

Occasionally, this facility may generate wastewater which was not characterized in the permit application because it is not a routine discharge and was not anticipated at the time of application. These wastes typically consist of waters used to pressure-test storage tanks or fire water systems or of leaks from drinking water systems.

The permit authorizes non-routine and unanticipated discharges under certain conditions. The facility must characterize these waste waters for pollutants and examine the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and on any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the wastewater.
- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

### **C. Operation and Maintenance Manual**

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state and federal regulations (40 CFR 122.41(e) and WAC 173-220-150 (1)(g)). The facility has prepared and submitted an operation and maintenance manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

### **D. General Conditions**

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

## **VII. PERMIT ISSUANCE PROCEDURES**

### **A. Permit Modifications**

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.



## B. Proposed Permit Issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five years.

## VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Washington State Department of Ecology.

2007. Focus Sheet on Solid Waste Control Plan, Developing a Solid Waste Control Plan for Industrial Wastewater Discharge Permittee's. Publication Number 07-10-024

Washington State Department of Ecology.

Laws and Regulations( <http://www.ecy.wa.gov/laws-rules/index.html> )

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

## APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to issue a Limited Purpose Landfill permit to TransAlta Centralia Mining LLC. The permit prescribes operating conditions and wastewater discharge limits. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on March 25, 2009, and March 31, 2009, in the *Chronicle* to inform the public about the submitted application and to invite comment on the issuance of this permit.

Ecology will place a Public Notice on date in the *Chronicle* to inform the public and to invite comment on the proposed issuance of this National Pollutant Discharge Elimination System permit as drafted.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period
- Tells how to request a public hearing about the proposed NPDES Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at <http://www.ecy.wa.gov/biblio/0307023.html>.

You may obtain further information from Ecology by telephone, 360-407-6290, or by writing to the permit writer at the address listed below.

Industrial Unit Permit Coordinator  
Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is Aziz Mahar, P.E.

## APPENDIX B--GLOSSARY

**1-DMax or 1-day maximum temperature**--The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

**7-DADMax or 7-day average of the daily maximum temperatures**--The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

**Acute Toxicity**--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

**AKART**--The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Annual Average Design Flow (AADF)**--The average of the daily flow volumes anticipated to occur over a calendar year.

**Average Monthly Discharge Limit**--The average of the measured values obtained over a calendar month's time.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring**--Uninterrupted, unless otherwise noted in the permit.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Detection Limit**--See Method Detection Level.

**Dilution Factor (DF)**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Major Facility**--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Maximum Daily Discharge Limit**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Maximum Day Design Flow (MDDF)**--The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

**Maximum Month Design Flow (MMDF)**--The largest volume of flow anticipated to occur during a continuous 30 day period, expressed as a daily average.

**Maximum Week Design Flow (MWDF)**--The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

**pH**--The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7.0 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Peak Hour Design Flow (PHDF)**--The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

**Peak Instantaneous Design Flow (PIDF)**--The maximum anticipated instantaneous flow.

**Quantitation Level (QL)**--The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. This may also be called Minimum Level or Reporting Level.

**Reasonable Potential**--A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

**Responsible Corporate Officer**--A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Solid waste**--All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the facility. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

## APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at <http://www.ecy.wa.gov/programs/eap/pwspread/pwspread.html>.

**Water Quality Based Permit Limit Calculations; these calculations are based on the “*Technical Support Document for Water Quality-based Toxic Control*”**

Parameter	Permit Limit Calculation Summary							
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator Acute	Metal Criteria Translator Chronic, ug/L	Water Quality Standard Acute, ug/L	Water quality Standard Chronic ug/L	Average Monthly Limit, ug/L	Maximum Daily Limit, ug/L
Chromium (VI)	1.00	1.00	1.00	1.00	15.00	10.00	10.30	15.00

## Human Health Criteria Analysis

[illegible]



## **APPENDIX D--RESPONSE TO COMMENTS**